

Appl. No. 09/491,991
Amdt. Dated August 30, 2006
Reply to Office Action of June 15, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method to manage congestion in a network, the method comprising:
determining a congestion status associated with a node in ~~one of~~ a single peer group and or a hierarchical level in the network, the congestion status being represented by a transit flag accessible to at least one other node in the single peer group or the hierarchical level to determine if a call is routed through the node; and
broadcasting the congestion status from the node to the at least one other node in ~~the one of the single peer group and or the hierarchical level in the network, the at least one other node capable of measuring node condition used to indicate node congestion.~~
2. (original) The method of claim 1 wherein determining the congestion status comprises:
measuring a node condition at the node, the node condition corresponding to the congestion status.
3. (currently amended) The method of claim 1 wherein ~~broadcasting the connection status~~ determining the congestion status comprises:
setting ~~[[a]] the transit flag, the transit flag being accessible to the at least one other node if the congestion status indicates a congestion, to indicate that a call through the node is avoided unless the node is a terminating node; and~~
resetting the transit flag, if the congestion status does not indicate a congestion, to indicate that the node is not restricted for transit.
4. (currently amended) The method of claim 1 wherein the node is ~~one of~~ a transit node and or a terminating node.

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5. (previously presented) The method of claim 1 wherein the node is a logical node in the hierarchical level, the logical node corresponding to a peer group at a next lower level.

6. (previously presented) The method of claim 1 wherein the at least one other node is one other logical node in the hierarchical level, the one other logical node corresponding to one other peer group at a next lower level.

7. (previously presented) The method of claim 1 wherein the network is an asynchronous mode transfer (ATM) network.

8. (currently amended) The method of claim 3 wherein the node is ~~one of~~ a private network-to-network interface (PNNI) node.

9. (currently amended) The method of claim 8 wherein the transit flag is ~~one of~~ a PNNI topology state parameter.

10. (currently amended) A method to manage congestion in a network, the method comprising:
receiving a congestion status associated with a node in ~~one of~~ a single peer group ~~and or~~ a hierarchical level in the network, the congestion status corresponding to a measured node condition at the node and being broadcast by the node to at least one other node in the single peer group or the hierarchical level, the congestion status being represented by a transit flag accessible to the at least one other node to determine if a call is routed through the node ~~the at least one other node capable of measuring node condition used to indicate node congestion~~; and routing ~~[[a]] the call to the node~~ based on the received congestion status.

11. (currently amended) The method of claim 10 wherein receiving the congestion status comprises accessing ~~[[a]] the transit flag set by the node, the transit flag corresponding to the congestion status.~~

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12. (currently amended) The method of claim 10 wherein the node is ~~one of~~ a transit node or ~~and~~ a terminating node.

13. (previously presented) The method of claim 10 wherein the node is a logical node in the hierarchical level, the logical node corresponding to a peer group at a next lower level.

14. (currently amended) The method of claim 10 wherein routing the call ~~to the node~~ comprises:

routing the call to the node if the node is a terminating node; ~~and~~

routing the call to the node if the node is a transit node and the congestion status indicates that the node is not congested; and

routing the call to an other node if the node is a transit node and the congestion status indicates that the node is congested.

15. (previously presented) The method of claim 10 wherein the network is an asynchronous mode transfer (ATM) network.

16. (currently amended) The method of claim 11 wherein the node is ~~one of~~ a private network-to-network interface (PNNT) node.

17. (currently amended) The method of claim 16 wherein the transit flag is ~~one of~~ a PNNT topology state parameter.

18. (currently amended) A computer program product comprising:

a computer usable medium having computer program code embodied therein for managing congestion in a network, the computer program product having:

computer readable program code for determining a congestion status associated with a node in ~~one of~~ a single peer group and or a hierarchical level in the network, the congestion status being represented by a transit flag accessible to at least one other node in the single peer group or the hierarchical level to determine if a call is routed through the node; and

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computer readable program code for broadcasting the congestion status from the node to the at least one other node in the one of the single peer group and or the hierarchical level in the network, the at least one other node capable of measuring node condition used to indicate node congestion.

19. (original) The computer program product of claim 18 wherein the computer readable program code for determining the congestion status comprises:

computer readable program code for measuring a node condition at the node, the node condition corresponding to the congestion status.

20. (currently amended) The computer program product of claim 18 wherein the computer readable program code for ~~broadcasting the connection status~~ determining the congestion status comprises:

computer readable program code for setting [[a]] the transit flag, the transit flag being accessible to the at least one other node if the congestion status indicates a congestion, to indicate that a call through the node is avoided unless the node is a terminating node; and
computer readable program code for resetting the transit flag, if the congestion status does not indicate a congestion, to indicate that the node is not restricted for transit.

21. (currently amended) The computer program product of claim 18 wherein the node is ~~one of~~ a transit node or and a terminating node.

22. (previously presented) The computer program product of claim 18 wherein the node is a logical node in the hierarchical level, the logical node corresponding to a peer group at a next lower level.

23. (previously presented) The computer program product of claim 18 wherein the at least one other node is one other logical node in the hierarchical level, the one other logical node corresponding to one other peer group at a next lower level.

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24. (previously presented) The computer program product of claim 18 wherein the network is an asynchronous mode transfer (ATM) network.

25. (currently amended) The computer program product of claim 20 wherein the node is ~~one of~~ a private network-to-network interface (PNNI) node.

26. (currently amended) The computer program product of claim 25 wherein the transit flag is ~~one of~~ a PNNI topology state parameter.

27. (currently amended) A computer program product comprising:
a computer usable medium having computer program code embodied therein for managing congestion in a network, the computer program product having:
computer readable program code for receiving a congestion status associated with a node in ~~one of~~ a single peer group and or a hierarchical level in the network, the congestion status corresponding to a measured node condition at the node and being broadcast by the node to at least one other node in the single peer group or the hierarchical level, the congestion status being represented by a transit flag accessible to the at least one other node to determine if a call is routed through the node ~~the at least one other node capable of measuring node condition used to indicate node congestion;~~ and
computer readable program code for routing ~~[[a]] the call to the node~~ based on the received congestion status.

28. (currently amended) The computer program product of claim 27 wherein the computer readable program code for receiving the congestion status comprises computer readable program code for accessing ~~[[a]] the transit flag set by the node, the transit flag corresponding to the congestion status.~~

29. (currently amended) The computer program product of claim 27 wherein the node is ~~one of~~ a transit node or ~~and~~ a terminating node.

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30. (previously presented) The computer program product of claim 27 wherein the node is a logical node in the hierarchical level, the logical node corresponding to a peer group at a next level.

31. (currently amended) The computer program product of claim 27 wherein the computer readable program code for routing the call ~~to the node~~ comprises:

computer readable program code for routing the call to the node if the node is a terminating node; and

computer readable program code for routing the call to the node if the node is a transit node and the congestion status indicates that the node is not congested; and

computer readable program code for routing the call to an other node if the node is a transit node and the congestion status indicates that the node is congested.

32. (previously presented) The computer program product of claim 27 wherein the network is an asynchronous mode transfer (ATM) network.

33. (currently amended) The computer program product of claim 28 wherein the node is ~~one of~~ a private network-to-network interface (PNNI) node.

34. (currently amended) The computer program product of claim 33 wherein the transit flag is ~~one of~~ a PNNI topology state parameter.

35. (currently amended) A system interfacing to a network comprising:

a processor coupled to the network; and

a memory coupled to the processor, the memory containing program code for managing congestion in the network, the program code when executed causing the processor to:

determine a congestion status associated with a node in ~~one of~~ a single peer group and or a hierarchical level in the network, the congestion status being represented by a transit flag accessible to at least one other node in the single peer group or the hierarchical level to determine if a call is routed through the node; and

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~~broadcasting broadcast~~ the congestion status from the node to the at least one other node in ~~the one of~~ the single peer group ~~and or~~ the hierarchical level ~~in the network, the at least one other node capable of measuring node condition used to indicate node congestion.~~

36. (original) The system of claim 35 wherein the program code causing the processor to determine the congestion status causes the processor to:
measure a node condition at the node, the node condition corresponding to the congestion status.

37. (currently amended) The system of claim 35 wherein the program code causing the processor to ~~broadcast the connection status~~ determine the congestion status causes the processor to:

set ~~[[a]] the transit flag, the transit flag being accessible to the at least one other node if~~ the congestion status indicates a congestion, to indicate that a call through the node is avoided unless the node is a terminating node; and

reset the transit flag, if the congestion status does not indicate a congestion, to indicate that the node is not restricted for transit.

38. (currently amended) The system of claim 35 wherein the node is ~~one of~~ a transit node and a terminating node.

39. (previously presented) The system of claim 35 wherein the node is a logical node in the hierarchical level, the logical node corresponding to a peer group at a next lower level.

40. (previously presented) The system of claim 35 wherein the at least one other node is one other logical node in the hierarchical level, the one other logical node corresponding to one other peer group at a next lower level.

41. (original) The system of claim 40 wherein the network is an asynchronous mode transfer (ATM) network.

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42. (currently amended) The system of claim 41 wherein the node is ~~one of~~ a private network-to-network interface (PNNI) node.

43. (currently amended) The system of claim 42 wherein the transit flag is ~~one of~~ a PNNI topology state parameter.

44. (currently amended) A system interfacing to a network comprising:
a processor coupled to the network; and
a memory coupled to the processor, the memory containing program code for managing congestion in the network, the program code when executed causing the processor to:
receive a congestion status associated with a node in ~~one of~~ a single peer group ~~and or~~ a hierarchical level in the network, the congestion status corresponding to a measured node condition at the node and being broadcast by the node to at least one other node in the single peer group or the hierarchical level, the congestion status being represented by a transit flag accessible to the at least one other node to determine if a call is routed through the node ~~the at least one other node capable of measuring node condition used to indicate node congestion; and~~
route ~~[[a]] the call to the node~~ based on the received congestion status.

45. (currently amended) The system of claim 44 wherein the program code causing the processor to receive the congestion status causes the processor to access ~~[[a]] the transit flag set by the node, the transit flag corresponding to the congestion status.~~

46. (currently amended) The system of claim 44 wherein the node is ~~one of~~ a transit node ~~or and~~ a terminating node.

47. (previously presented) The system of claim 44 wherein the node is a logical node in the hierarchical level, the logical node corresponding to a peer group at a next lower level.

48. (currently amended) The system of claim 44 wherein the program code causing the processor to route the call ~~to the node~~ causes the processor to:
route the call to the node if the node is a terminating node; and

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route the call to the node if the node is a transit node and the congestion status indicates that the node is not congested; and

route the call to an other node if the node is a transit node and the congestion status indicates that the node is congested.

49. (previously presented) The system of claim 44 wherein the network is an asynchronous mode transfer (ATM) network.

50. (currently amended) The system of claim 45 wherein the node is ~~one of~~ a private network-to-network interface (PNNI) node.

51. (currently amended) The system of claim 50 wherein the transit flag is ~~one of~~ a PNNI topology state parameter.

52. (currently amended) An apparatus to manage congestion in a network comprising:

means for determining a congestion status associated with a node in ~~one of~~ a single peer group ~~and or~~ a hierarchical level in the network, the congestion status being represented by a transit flag accessible to at least one other node in the single peer group or the hierarchical level to determine if a call is routed through the node; and

means for broadcasting the congestion status from the node to the at least one other node in ~~the one of~~ the single peer group ~~and or~~ the hierarchical level ~~in the network, the at least one other node capable of measuring node condition used to indicate node congestion.~~

53. (previously presented) The apparatus of claim 52 wherein the means for determining the congestion status comprises:

means for measuring a node condition at the node, the node condition corresponding to the congestion status.

54. (currently amended) The apparatus of claim 52 wherein the means for ~~broadcasting the connection status~~ determining the congestion status comprises:

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means for setting [[a]] the transit flag, the transit flag being accessible to the at least one other node if the congestion status indicates a congestion, to indicate that a call through the node is avoided unless the node is a terminating node; and

means for resetting the transit flag, if the congestion status does not indicate a congestion, to indicate that the node is not restricted for transit.

55. (currently amended) The apparatus of claim 52 wherein the node is ~~one of~~ a transit node or ~~and~~ a terminating node.

56. (previously presented) The apparatus of claim 52 wherein the node is a logical node in the hierarchical level, the logical node corresponding to a peer group at a next lower level.

57. (previously presented) The apparatus of claim 52 wherein the at least one other node is one other logical node in the hierarchical level, the one other logical node corresponding to one other peer group at a next lower level.

58. (previously presented) The apparatus of claim 52 wherein the network is an asynchronous mode transfer (ATM) network.

59. (currently amended) The apparatus of claim 54 wherein the node is ~~one of~~ a private network-to-network interface (PNNI) node.

60. (currently amended) The apparatus of claim 59 wherein the transit flag is ~~one of~~ a PNNI topology state parameter.

61. (currently amended) An apparatus to manage congestion in a network comprising:

means for receiving a congestion status associated with a node in ~~one of~~ a single peer group ~~and or~~ a hierarchical level in the network, the congestion status corresponding to a measured node condition at the node and being broadcast by the node to at least one other node

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in the single peer group or the hierarchical level, the congestion status being represented by a transit flag accessible to the at least one other node to determine if a call is routed through the node ~~the at least one other node capable of measuring node condition used to indicate node congestion;~~ and

means for routing ~~[[a]] the call to the node~~ based on the received congestion status.

62. (currently amended) The apparatus of claim 61 wherein the means for receiving the congestion status comprises:

means for accessing ~~[[a]] the transit flag set by the node, the transit flag corresponding to the congestion status.~~

63. (currently amended) The apparatus of claim 61 wherein the node is ~~one of a~~ transit node or ~~and~~ a terminating node.

64. (previously presented) The apparatus of claim 61 wherein the node is a logical node in the hierarchical level, the logical node corresponding to a peer group at a next lower level.

65. (currently amended) The apparatus of claim 61 wherein the means for routing the call ~~to the node~~ comprises:

means for routing the call to the node if the node is a terminating node; ~~and~~

means for routing the call to the node if the node is a transit node and the congestion status indicates that the node is not congested; and

means for routing the call to an other node if the node is a transit node and the congestion status indicates that the node is congested.

66. (previously presented) The apparatus of claim 61 wherein the network is an asynchronous mode transfer (ATM) network.

67. (currently amended) The apparatus of claim 62 wherein the node is ~~one of a~~ private network-to-network interface (PNNI) node.

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68. (currently amended) The apparatus of claim 67 wherein the transit flag is ~~one of~~ a PNNI topology state parameter.